

- (b) Explain hypothesis testing in inferential statistics with an example. (7)
6. (a) Explain the journal submission process, including peer review types – single, blind, and double blind. (8)
- (b) Describe the role of Scientometric analysis and citation indices in evaluating research impact. (7)
- 7 (a) Explain key ethical issues in research and their importance in protecting participants. (8)
- (b) Discuss intellectual property rights, professional code of ethics, and the consequences of fraud and misconduct in science. (7)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 9086

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Unique Paper Code : 6203450019

Name of the Paper : Research Methodology

Name of the Course : **B.Voc Software Development**

Semester : VII

Duration : 3 Hours

Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. The paper has **two** sections. **Section A** is compulsory. Each question is of **5** marks.
3. Attempt any **four** questions from **Section B**. Each question is of **15** marks.

Section A

1. (a) Define research and explain its significance in academic and professional contexts. (5)
- (b) Differentiate between basic, applied, and conceptual research with suitable examples. (5)
- (c) Explain the process of literature review and its importance in identifying research problems. (5)
- (d) Define descriptive statistics and explain measures of central tendency with examples. (5)
- (e) List and explain the essential elements of a research paper. (5)
- (f) What is plagiarism? Discuss tools used to detect plagiarism and preventive measures. (5)

Section B

2. (a) Explain the difference between induction and deduction in research with examples. (8)
- (b) Discuss the qualities of a good researcher and how they impact research outcomes. (7)

3. (a) A researcher collected the following test scores of 10 students :

45, 50, 55, 60, 65, 70, 75, 80, 85, 90

Calculate the coefficient of variation (CV) and interpret the result. (8)

- (b) Compute mean, variance, and standard deviation. (7)

4. (a) Explain the process of data pre-processing and organization of datasets in research. (8)

- (b) Discuss the steps in interpreting research data and drawing conclusions. (7)

5. (a) A manufacturer claims that the average tensile strength of a new fiber is at most 200 MPa. A sample of 50 fibers shows a mean tensile strength of 203 MPa with a standard deviation of 6 MPa. At the 5% level of significance, test whether the mean tensile strength is significantly greater than 200 MPa. Use right-tailed Z-test. Critical value of $Z = +1.645$. (8)